Space Weather Forecast

Issued on Sunday, 23 July 2023 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Minor/Moderate flares throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Moderate, with only one Moderate class flare from a large region in the northwest quadrant. This is one of three large regions on the solar disc, with one in the west central disc and one in the northeast quadrant. These three regions contribute the most to the overall flare risk and are three of seven classified regions on the disc, which many of the remaining regions weak or declining.

A CME from the moderate flare has been assessed as missing the Earth. Two further eruptions from the northeast will be assessed once sufficient satellite imagery becomes available. No other Earth-directed CMEs were observed.

Solar Wind / Geomagnetic Activity: A glancing CME late on 21 Jul briefly enhanced solar wind parameters before a connection to a fast solar wind, which increased speeds to slightly elevated levels. Total magnetic field strength declined from moderate to weak levels. The north-south component varied weakly throughout. Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has now eased with no radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is forecast to be mainly low with isolated Moderate activity.

Solar Wind / Geomagnetic Activity: A CME from 22 Jul has been assessed as missing the Earth. Two further eruptions from the northeast quadrant will be assessed when sufficient imagery becomes available. A fast solar wind is forecast to connect with the Earth either late on 23 or during 24 Jul, with speeds around 450-500km/s. Mainly Quiet to Unsettled geomagnetic activity is expected, with a slight chance of Active or G1/Minor Storms either late on 23 or during 24 Jul due to the onset of the high speed stream.

Energetic Particles / Solar Radiation: The count rate of energetic particles is expected to remain at background with only a very slight chance of rising. Radiation storms are currently not expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.